

**REMARKS**

No claims are amended. The disposition of the claims is set forth below:

**Disposition of Claims**

- 4) ☒ Claim(s) 20, 49, 51, 57, 59 and 65-71 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 20, 49, 51, 57, 59 and 65-71 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Claims 1-19, 21-48, 50, 52-56, 58, and 60-64 are Canceled.**

**Maintained Claim Rejections under 36 U.S.C. Section 103**

In the final office action, the Examiner stated :

Claims 20, 49, 51, 57, 59, 65-70 and 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feld et al (US patent no 7294333, dated 11/13/2007, filed on 10/20/2000), Lee et al (Molecular Therapy, 2001, 857-866, IDS, hereafter Lee 1), Lee et al. (USP 7,494,644, dated 2/24/2009, effective filing date 11/7/2002, art of record, hereafter Lee 2), and Qu et al (Circulation res. 2001, 89:e8-14, IDS).

Applicants have amended claims 20 and 65 to include the negative limitation “, and wherein the MSC is not incorporated with a nucleic acid which encodes a connexin.” that excludes using MSC that overexpress connexin as taught by Lee.

As the Examiner acknowledges, Feld did not teach the use of mesenchymal stem cells, which at that time were believed to be unable to form gap junctions. Applicants were the first to discover that MSC can form gap junctions with cardiomyocytes without being transfected to overexpress a connexin; which was an unexpected result and a significant advance over the teachings of the prior art.

Lee reports his discovery that genetic modification of skeletal muscle cells or MSC to overexpress a recombinant connexin enables the genetically modified cells to establish electrocommunication with cardiac cells via gap junctions. By contrast, Applicants unexpectedly discovered contrary to Lee, that MSC that do not overexpress connexin are still able to form gap junctions with cardiomyocytes. Lee's requirement that the implanted MSCs overexpress recombinant connexins in order to be able to establish electrical contact with cardiomyocytes therefore teaches away from the present invention as claimed in the amended claims, wherein MSCs that have not been engineered to overexpress connexins are used. Applicants therefore respectfully submit that the pending claims as amended are not obvious over the combination of references cited by the Examiner, and ask that the rejection be withdrawn.

### **Concluding Remarks**

Applicants respectfully submit that the present application is in condition for allowance. Favorable consideration is respectfully requested. If any unresolved issues remain, it is respectfully requested that the Examiner telephone the undersigned attorney at (703) 622-6528 so that such issues may be resolved as expeditiously as possible.

A petition for a one extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 505429 and please credit any excess fees to such deposit account.

Respectfully Submitted,  
EVANS & MOLINELLI PLLC

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/Judith Evans, 38874/

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Date

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